AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for assigning a channel to a UE (user equipment) by a UTRAN (UMTS (Universal Mobile Telecommunications System) Terrestrial Radio Access Network) in a CDMA (Code Division Multiple Access) communication system, the method comprising the steps of:

receiving a access preamble signature from the UE; ~~and~~

determining an available physical common packet channel (PCPCH) in the UTRAN in response to the received access preamble signature;

selecting one of a plurality of channel assignment signatures ~~associated with the received access preamble signature in order to assign one of a plurality of physical common packet channels (PCPCHs) unused in the UTRAN~~ based on the determined physical common packet channel (PCPCH); and

transmitting the selected channel assignment signature to the UE.

2. (Original) The method as claimed in claim 1, wherein the UTRAN selects one of the channel assignment signatures depending on a maximum data rate required when the UE transmits data.

3. (Cancelled)

4. (Currently Amended) The method as claimed in claim 1 [[3]], wherein the PCPCH selecting step comprises the steps of:

determining a number P_{SF} of PCPCHs capable of supporting a ~~maximum~~ data rate required when the UE transmits data out of an available ~~the unused~~ PCPCHs;

determining a number S_{SF} of access preamble signature available for the ~~maximum~~ data rate required when the UE transmits data;

determining a number T_{SF} of channel assignment signatures available for the ~~maximum~~ data rate depending on the number P_{SF} of the PCPCHs;

calculating a minimum positive number M_{SF} out of positive numbers which are determined to have a remainder of '0' when multiplying the number S_{SF} of the access preamble signatures by a given positive number and dividing the multiplied value by the number P_{SF} of the PCPCHs;

calculating a specific coefficient 'n' satisfying the following equation

$$n*M_{SF}*S_{SF} \leq i+j*S_{SF} < (n+1)*M_{SF}*S_{SF}$$

where i denotes an access preamble signature number and j denotes a channel allocation message number; and

selecting one PCPCH's number 'k' out of the available PCPCHs ~~unused~~ in the UTRAN by satisfying the following equation

$$k = \{[(i+n) \bmod S_{SF}]+j*S_{SF}\} \bmod P_{SF}.$$

5. (Currently Amended) The method as claimed in claim 4, further comprising the steps of:

calculating a specific coefficient 'm' for determining a data rate by satisfying the following equation

$$P_{2^{m-1}} \leq k < P_{2^m}$$

where $P_{2^{m-1}}$ denotes a channelization code with a spreading factor 2^{m-1}, and P_{2^m} denotes a channelization code with a spreading factor 2^m;

calculating an uplink scrambling code's number by satisfying the following equation

$$\left\lfloor \sum_{2 \leq a < m-1} (P_{2^a} - P_{2^{a-1}}) / 2^{a-1} + (k - P_{2^{m-1}}) / 2^m \right\rfloor$$

where, α is an integer numbers;

calculating a heading node by satisfying the following equation

$$\left(\sum_{2 \leq a \leq m-1} (P_{2^a} - P_{2^{a-1}}) * 2^{m-a} + k - P_{2^{m-1}} \right) / 2^{m-1} \quad ; \text{and}$$

selecting a channelization code with a spreading factor corresponding to the ~~maximum~~ data rate from the heading node and determining the selected channelization code as a channelization code to be used by the UE.

6. (Currently Amended) The method as claimed in claim 1, wherein the channel assignment signature (j) is selected by satisfying following equation;

$$n*M_{SF}*S_{SF} \leq i+j*S_{SF} < (n+1)*M_{SF}*S_{SF}$$

where, i is number of the access preamble signature, the S_{SF} is a number of access preamble signatures assigned for the ~~maximum~~ data rate determined by the access preamble signature, the M_{SF} is a minimum positive number(M_{SF}) out of positive numbers which are determined to have a remainder of '0' when multiplying the number S_{SF} by a given positive number and dividing the multiplied value by a number P_{SF} representing number of PCPCHs assigned to support the ~~maximum~~ data rate, the n indicates how many times a period of M_{SF} has been repeated.

7. (Original) The method as claimed in claim 6, wherein a PCPCH (k) is determined by satisfying following equation;

$$k = \{[(i+n) \bmod S_{SF}]+j*S_{SF}\} \bmod P_{SF}.$$

8 – 14. (Cancelled)

15. (Currently Amended) A method for assigning a channel in a UE (user equipment) for a CDMA (Code Division Multiple Access) communication system, comprising the steps of:

receiving a maximum data rate supported by available physical common packet channels (PCPCHs) in the UTRAN;

upon generation of data to be transmitted over a PCPCH channel, selecting one of a plurality of access preamble signatures and transmitting the selected access preamble signature to a UTRAN based on the received maximum data rate;

receiving a selected one of a plurality of channel assignment signatures from the UTRAN based on the available physical common packet channels (PCPCHs); and

determining a PCPCH channel ~~for transmitting the data~~ depending on ~~the selected access preamble signature and~~ the received channel assignment signature.

16. (Original) The method as claimed in claim 15, wherein the UE selects one of the access preamble signatures depending on a maximum data rate required when transmitting the data.

17. (Currently Amended) The method as claimed in claim 15, wherein the PCPCH (k) is determined by satisfying following equation;

$$k = \{[(i+n) \bmod S_{SF}]+j*S_{SF}\} \bmod P_{SF}[[.]]$$

where, i is a number of the access preamble signature, the j is a number of the received channel assignment signature, the S_{SF} is a number of access preamble signatures assigned for the ~~maximum~~ data rate determined by the access preamble signature, the P_{SF} representing a number of PCPCHs assigned to support the ~~maximum~~ data rate, and the n indicates how many times a period of M_{SF}, which represent a minimum positive number out of positive numbers which are determined to have a remainder of '0' when multiplying the number S_{SF} by a given positive number and dividing the multiplied value by a number P_{SF}, has been repeated.

18. (Currently Amended) The method as claimed in claim 15, wherein the selecting step comprises the steps of:

determining a number P_{SF} of PCPCHs capable of supporting a ~~maximum~~ data rate required when the UE transmits data out of the available ~~unused~~ PCPCHs;

determining a number S_{SF} of access preamble signatures available for the ~~maximum~~ data rate required when the UE transmits data;

determining a number T_{SF} of channel assignment signatures available for the ~~maximum~~ data rate depending on the number P_{SF} of the PCPCHs;

calculating a minimum positive number M_{SF} out of positive numbers which are determined to have a remainder of '0' when multiplying the number S_{SF} of the access preamble signatures by a given positive number and dividing the multiplied value by the number P_{SF} of the PCPCHs;

calculating a specific coefficient 'n' satisfying the following equation

$$n*M_{SF}*S_{SF} \leq i+j*S_{SF} < (n+1)*M_{SF}*S_{SF}$$

where i denotes an access preamble signature number and j denotes a channel allocation message number; and

selecting one PCPCH's number 'k' out of the available PCPCHs ~~unused~~ in the UTRAN by satisfying the following equation

$$k = \{[(i+n) \bmod S_{SF}]+j*S_{SF}\} \bmod P_{SF}.$$

19. (Currently Amended) The method as claimed in claim 18, further comprising the steps of:

calculating a specific coefficient 'm' for determining a data rate by satisfying the following equation

$$P_{2^{m-1}} \le k < P_{2^m}$$

where $P_{2^{m-1}}$ denotes a channelization code with a spreading factor 2^{m-1}, and P_{2^m} denotes a channelization code with a spreading factor 2^m;

calculating an uplink scrambling code's number by satisfying the following equation

$$\left\lfloor \sum_{2 \le a < m-1} (P_{2^a} - P_{2^{a-1}}) / 2^{a-1} + (k - P_{2^{m-1}}) / 2^m \right\rfloor$$

where, a is an integer numbers;

calculating a heading node by satisfying the following equation

$$\left(\sum_{2 \le a \le m-1} (P_{2^a} - P_{2^{a-1}}) * 2^{m-a} + k - P_{2^{m-1}} \right) / 2^{m-1}$$

; and

selecting a channelization code with a spreading factor corresponding to the ~~maximum~~ data rate from the heading node and determining the selected channelization code as a channelization code to be used by the UE.

20. (New) A method for assigning a channel to a UE (user equipment) by a UTRAN (UMTS (Universal Mobile Telecommunications System) Terrestrial Radio Access Network) in a CDMA (Code Division Multiple Access) communication system, the method comprising the steps of:

receiving a selected one of a plurality of access preamble signatures from the UE;

transmitting a access preamble acquisition indicator signal to the UE;

receiving a collision detection preamble from the UE;

determining a specific channel assignment signature from a plurality of channel assignment signatures so as to select one of a plurality of unused PCPCHs (physical common packet channels) depending on the received access preamble signature and a channel assignment signature; and

transmitting a collision detection indicator channel signal and the determined specific channel assignment signature to the UE.

21. (New) A method for assigning a channel in a UE (user equipment) for a CDMA (Code Division Multiple Access) communication system, comprising the steps of:

upon generation of data to be transmitted over a PCPCH channel, selecting one of a plurality of access preamble signatures and transmitting the selected access preamble signature to a UTRAN;

receiving a access preamble acquisition indicator signal from the UTRAN;

transmitting a collision detection preamble to the UTRAN;

receiving a collision detection indicator channel signal and a selected one of a plurality of channel assignment signatures from the UTRAN; and

determining a PCPCH channel for transmitting the data depending on the selected access preamble signature and the received channel assignment signature.